

# DRAFT: GREENHOUSE GAS EMISSIONS

## WHY ZERO WASTE IS IMPORTANT –THE GREENHOUSE GAS CONNECTION

The City of Mountain View's Environmental Sustainability Action Plan (ESAP), and the work of the Environmental Sustainability Task Force that led to the ESAP acknowledge the unsustainable pace at which we are consuming our natural resources, and the environmental impacts associated with the ongoing pollution of our water, air, and land. Zero Waste programs and policies address these issues by identifying inefficiencies in the production, use, and disposal of materials and energy and striving to eliminate them. In doing so, Zero Waste programs lead us to a more sustainable future. Development of a Zero Waste Plan is an element of the ESAP.

### *Sources of Emissions*

Greenhouse Gas (GHG) emissions from materials consumption largely fall into two broad categories:

Extraction and Manufacturing A 2009 study by the U.S. EPA, *Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices*, found that 44% of all GHG emissions are related to the extraction of resources and the use of energy in the production and transportation of goods and services. A Zero Waste approach seeks to minimize GHG in manufacturing, to maximize the reuse of products, and to maximize recycling and recovery at product "end of life".

Decomposing Compostable Materials in Landfills Methane is generated as compostable materials decompose in landfills. Depending on how impacts are calculated, methane is between 21 and 100 times more potent a GHG than carbon dioxide, and is released from even the best designed and managed landfills. A Zero Waste approach seeks to eliminate compostable materials from the disposal stream before they reach the landfill, and to process them into useful products. [See Attachment 8 "Key Diversion Programs Analysis".]

In general, the relative GHG impacts of transport of collected materials from curbside to processing and disposal facilities, and to markets are very small relative to the two types of impacts noted above, and generally represent far less than 1 percent of total impacts. Furthermore, replacement of the current collection fleet over time with alternative fuel vehicles could largely offset the GHG impacts from transportation.

### *Quantifying Zero Waste Emissions Reductions*

Achieving Zero Waste will play a significant role in reducing community greenhouse gas emissions. Mountain View's *Community-Wide Greenhouse Gas Inventory*, completed in August 2009 found that total GHG emissions for the baseline year of 2005 equaled about 752,000 metric tons CO<sub>2</sub> equivalent (MTCE) per year. Of this total, about 14,900 MTCE per year resulted from land disposal of new material in 2005. Meeting a 90% diversion target through the Zero Waste Plan will reduce GHG's by approximately 9,400 MTCE per year. However, this figure underestimates the total amount of reduction because it addresses only the second of the two areas of impact identified above, the decomposition of the disposed materials into methane and other gasses. The estimate does not include other GHG reductions that will occur, such as those in the manufacturing sector due to increased reuse and

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recycling. These benefits are substantial, ranging from a reduction of 0.2 MTCE of GHG from recycling one ton of glass containers to 12.9 MTCE of GHG from recycling one ton of aluminum.

## ***Emissions Reductions and the Zero Waste Plan***

In identifying potential programs, the Zero Waste Plan (Plan) implicitly values reuse, recycling, and compostable materials programs for the role they all play in reducing GHG emissions. In general, it is safe to assume that reduced GHG emissions will correlate with increased diversion. Thus, the program analysis focuses on diversion and cost benefit. In general, programs with the highest diversion will also have the greatest GHG reduction benefits.

There may be a few instances in which the Plan and/or evaluation of collection services addresses trade-offs related to diversion and transport for specific programs. For instance, if switching from every-other-week to weekly multi-family recycling contributes relatively few new tons of diversion, the added truck miles, traffic congestion, road impacts, and GHG emissions associated with weekly pickup may outweigh the diversion benefits.

The Plan may provide additional analysis, as applicable, in support of the above estimate of GHG reductions associated with a 90% diversion rate.